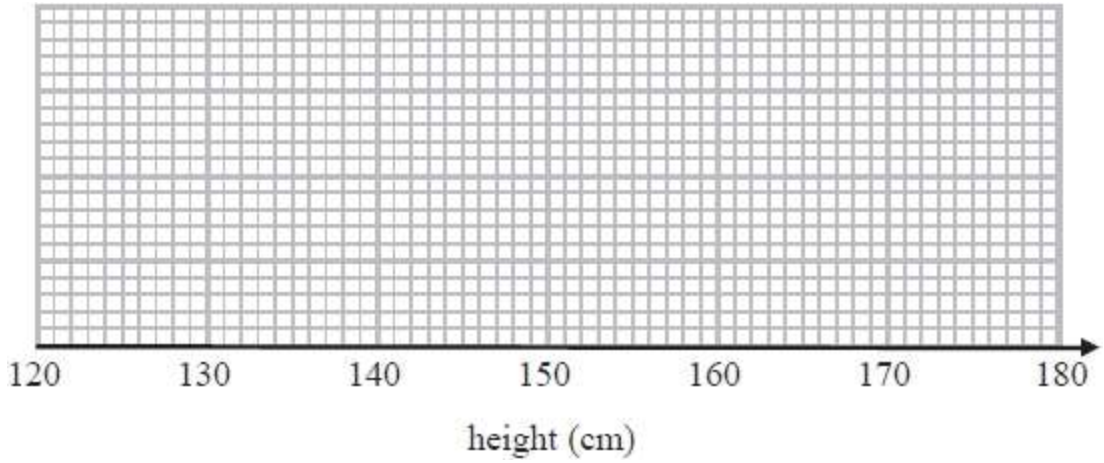
GCSE QUESTIONS

Q1. NON-CALCULATOR

The table gives some information about the heights of 80 girls.

Least height	133 cm
Greatest height	170 cm
Lower quartile	145 cm
Upper quartile	157 cm
Median	151 cm

(a) Draw a box plot to represent this information.



(3)

(b) Work out an estimate for the number of these girls with a height between 133 cm and 157 cm.

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(2)

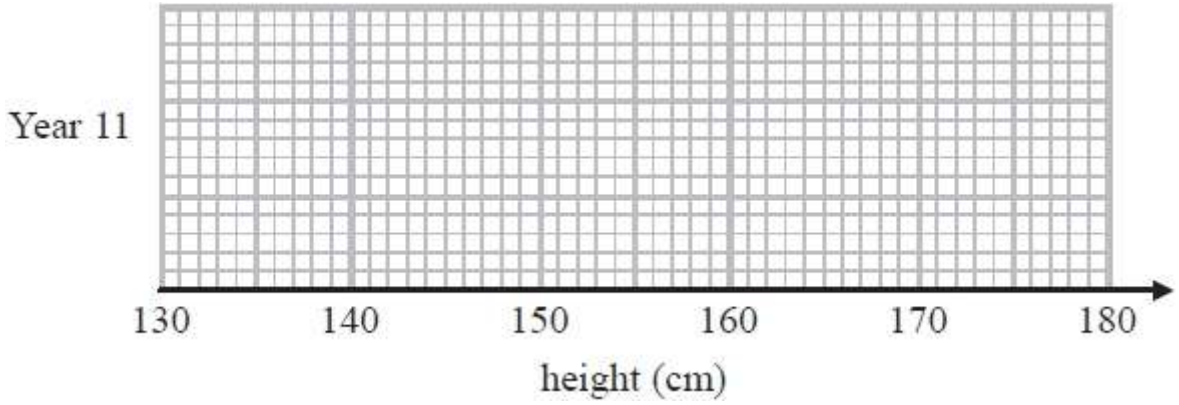
(Total for question = 5 marks)

Q2. NON-CALCULATOR

The table shows information about the heights, in cm, of a group of Year 11 girls.

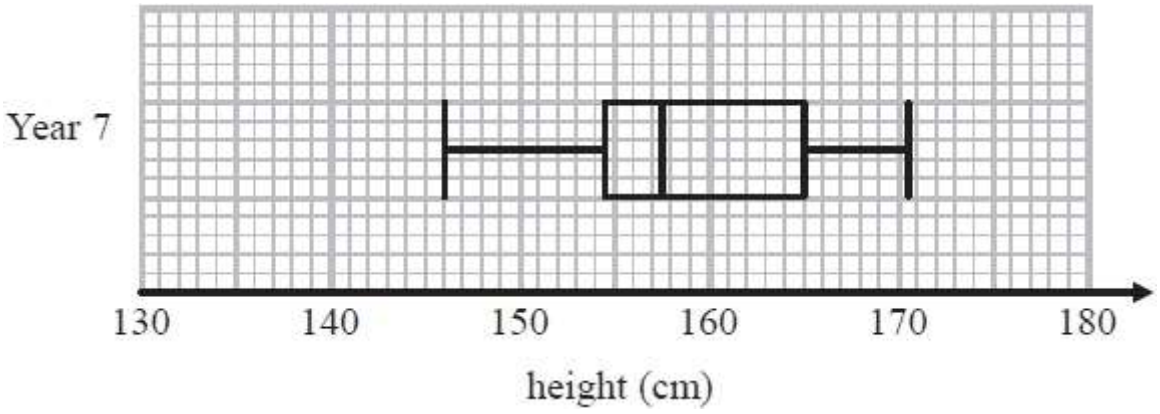
	height (cm)
least height	154
median	165
lower quartile	161
interquartile range	7
range	20

(a) Draw a box plot for this information.



(3)

The box plot below shows information about the heights, in cm, of a group of Year 7 girls.



(b) Compare the distribution of heights of the Year 7 girls with the distribution of heights of the Year 11 girls.

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(2)

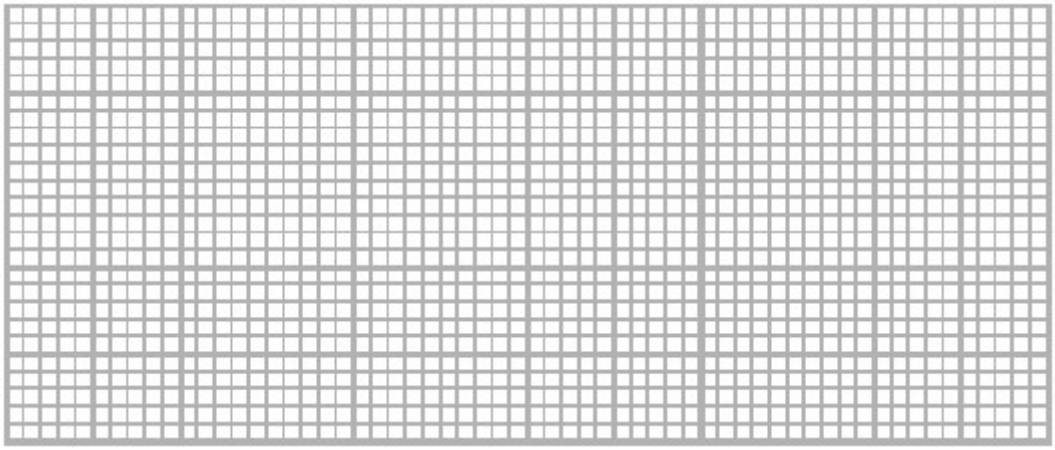
(Total for question = 5 marks)

Q3. NON-CALCULATOR

Ben played 15 games of basketball.
Here are the points he scored in each game.

17 18 18 18 19 20 20 22 23 23 23 26 27 28 28

(a) Draw a box plot for this information.



(3)

Sam plays in the same 15 games of basketball.

The median number of points Sam scored is 23
The interquartile range of these points is 12
The range of these points is 20

(b) Who is more consistent at scoring points, Sam or Ben?
You must give a reason for your answer.

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(2)

(Total for question = 5 marks)

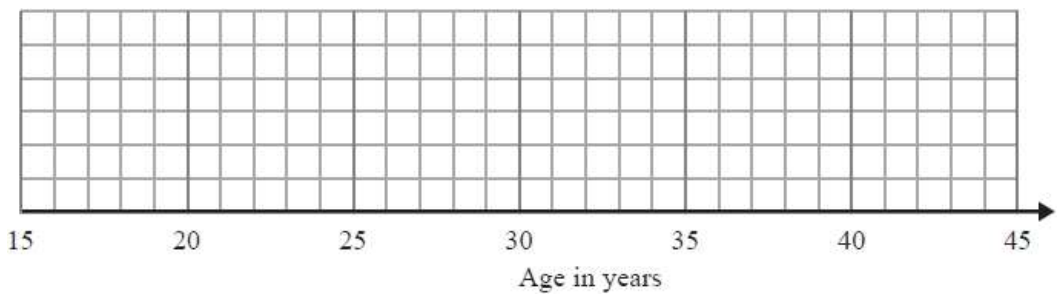
Q4. NON-CALCULATOR

The stem and leaf diagram shows the ages, in years, of 25 people.

1	7	7	8	9							
2	1	2	4	4	5	5	6	7	8	9	9
3	0	1	2	2	3	4	5	6			
4	0	1									

Key: 1|7 represents 17 years

(a) (i) On the grid, draw a box plot for this information.



(3)

One of these people is chosen at random.

(ii) What is the probability that this person is 30 years of age or older?

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(2)

The grouped frequency table gives information about the ages of a different group of people.

Age (a years)	Frequency
$0 < a \leqslant 20$	7
$20 < a \leqslant 30$	12
$30 < a \leqslant 40$	5
$40 < a \leqslant 50$	1

Anne drew this cumulative frequency table for this information.

Age (a years)	Cumulative frequency
$0 < a \leqslant 20$	7
$20 < a \leqslant 30$	19
$30 < a \leqslant 40$	24
$40 < a \leqslant 50$	25

The cumulative frequency table is **not** correct.

(b) Write down one thing that is wrong with the table.

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(1)

(Total for question = 6 marks)

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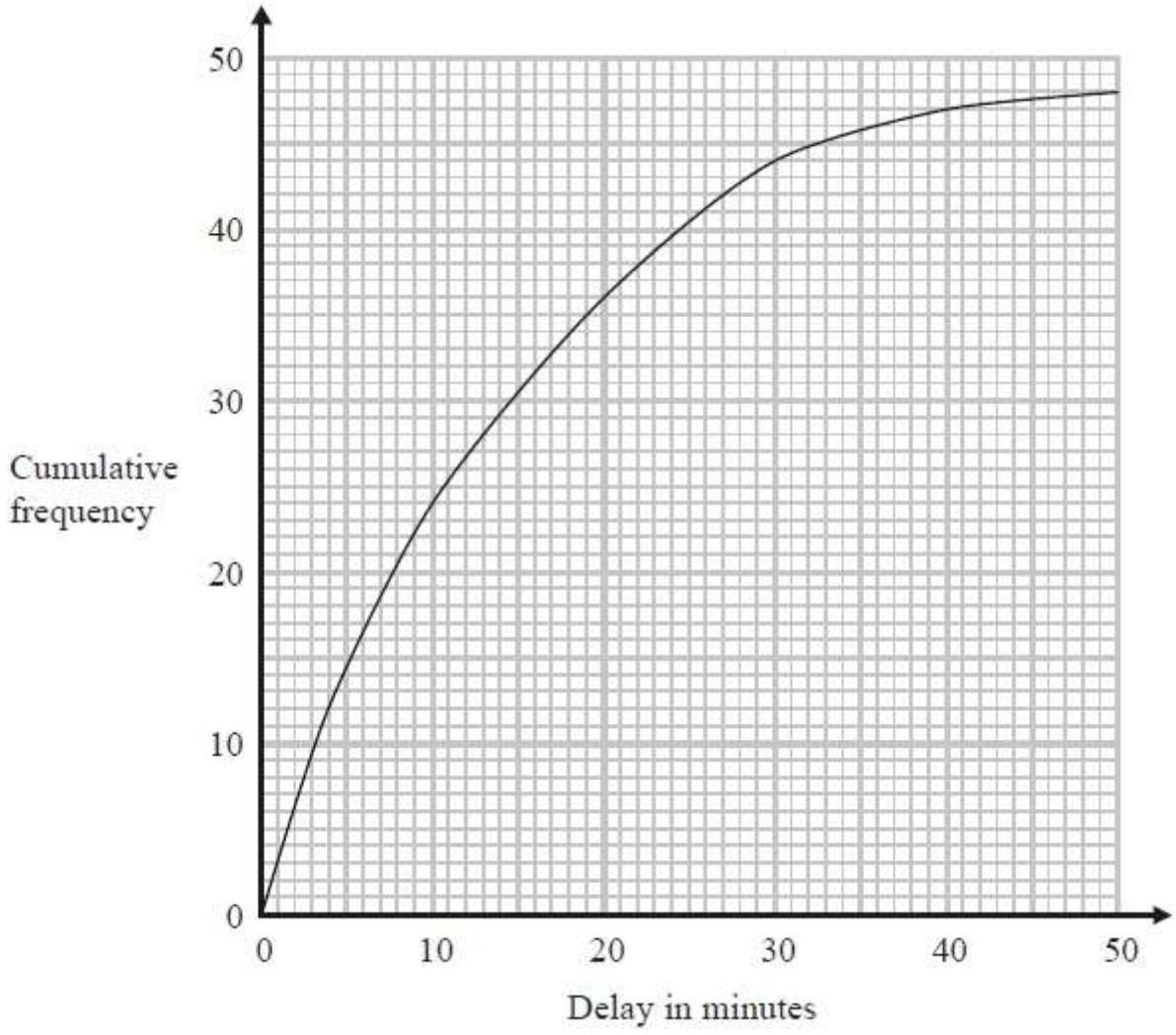
Q5. NON-CALCULATOR

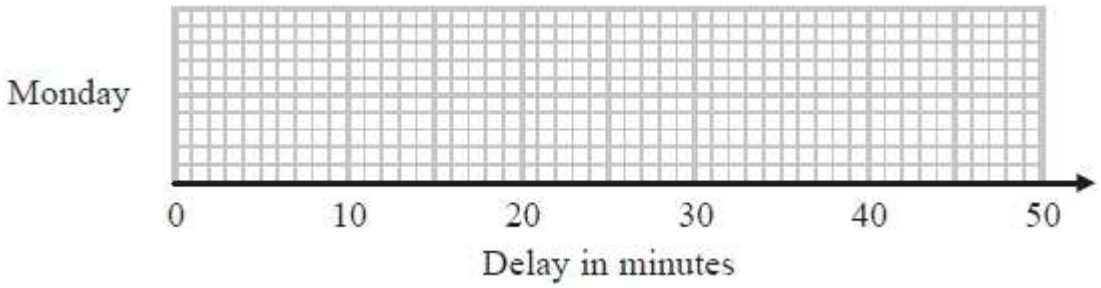
The times that 48 trains left a station on Monday were recorded.

The cumulative frequency graph gives information about the numbers of minutes the trains were delayed, correct to the nearest minute.



The shortest delay was 0 minutes.
The longest delay was 42 minutes.

(a) On the grid below, draw a box plot for the information about the delays on Monday.



(3)

48 trains left the station on Tuesday.
The box plot below gives information about the delays on Tuesday.

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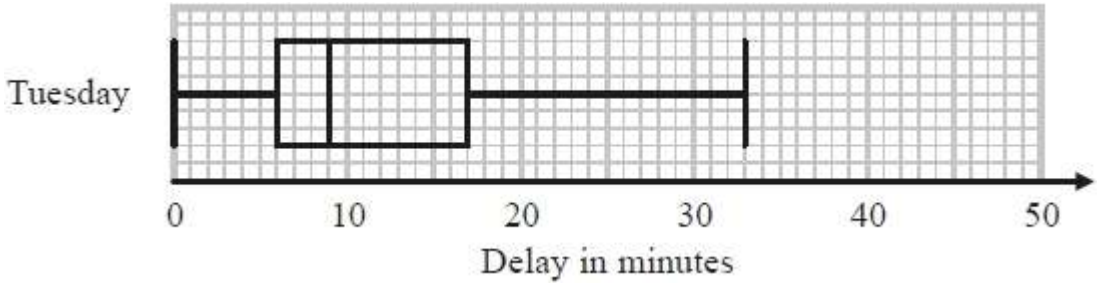

(b) Compare the distribution of the delays on Monday with the distribution of the delays on Tuesday.

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(2)

Mary says,

"The longest delay on Tuesday was 33 minutes.
This means that there must be some delays of between 25 minutes and 30 minutes."

(c) Is Mary right?

You must give a reason for your answer.

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(1)

(Total for question = 6 marks)

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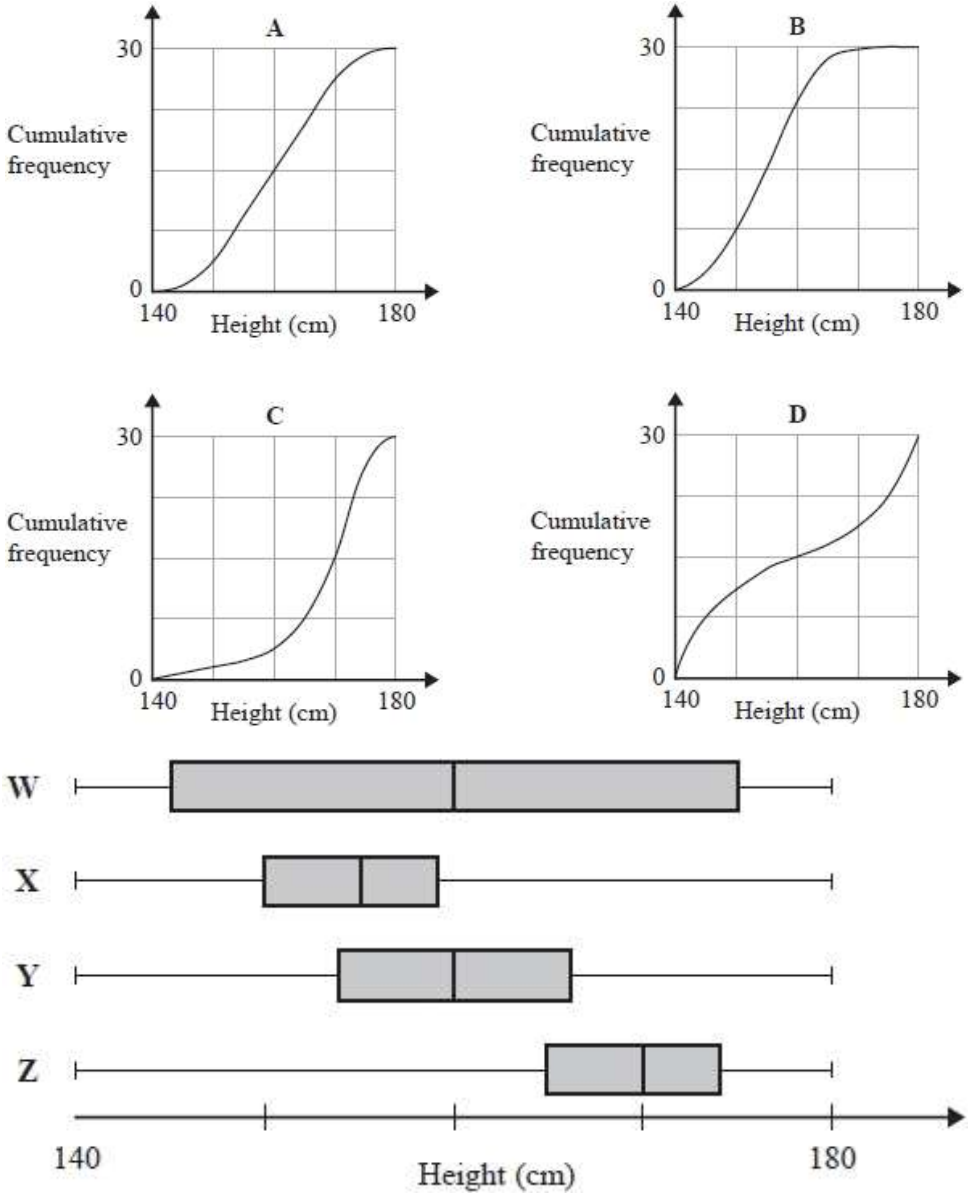
Q6. NON-CALCULATOR

Joan measured the heights of students in four different classes.

She drew a cumulative frequency graph and a box plot for each class.



Match each cumulative frequency graph to its box plot.

Cumulative frequency graph	Box plot
A	
B	
C	
D	

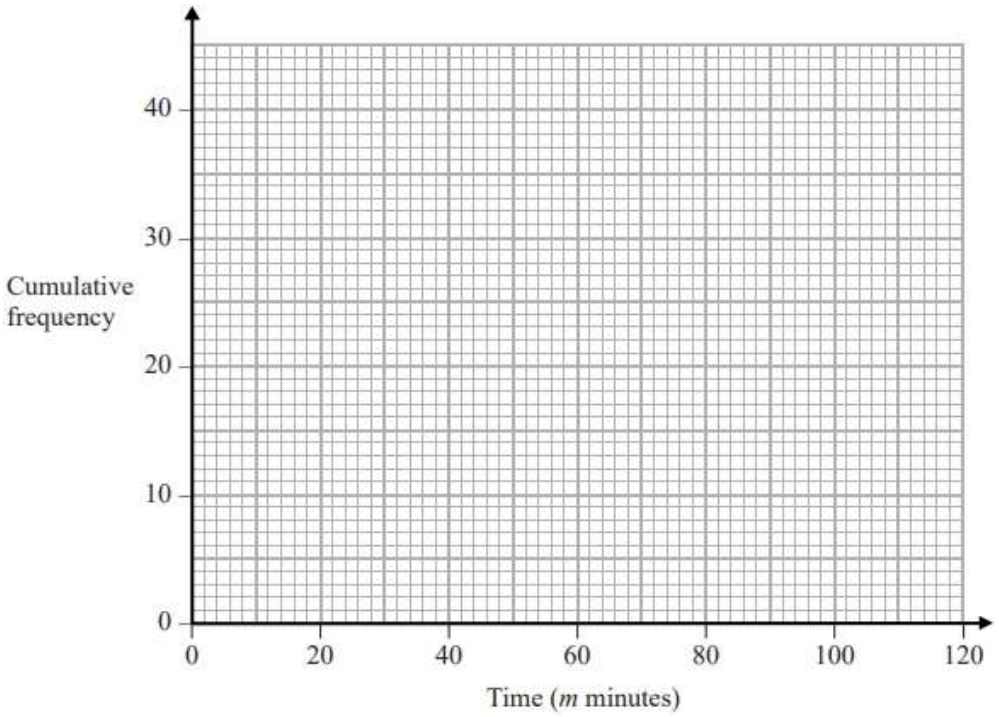
(Total for question = 2 marks)

Q7. NON-CALCULATOR

The cumulative frequency table shows information about the times, in minutes, taken by 40 people to complete a puzzle.

Time (m minutes)	Cumulative frequency
$20 < m \leqslant 40$	5
$20 < m \leqslant 60$	25
$20 < m \leqslant 80$	35
$20 < m \leqslant 100$	38
$20 < m \leqslant 120$	40

(a) On the grid below, draw a cumulative frequency graph for this information.



(2)

(b) Use your graph to find an estimate for the interquartile range.

..... minutes

(2)

One of the 40 people is chosen at random.

(c) Use your graph to find an estimate for the probability that this person took between 50 minutes and 90 minutes to complete the puzzle.

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(2)

(Total for question = 6 marks)

Q8. NON-CALCULATOR

Time taken (t minutes)	Cumulative frequency
$0 < t \leqslant 10$	0
$0 < t \leqslant 20$	7
$0 < t \leqslant 30$	20
$0 < t \leqslant 40$	64
$0 < t \leqslant 50$	74
$0 < t \leqslant 60$	80

The cumulative frequency table gives information about the time, in minutes, Jane took to go from her home to school each day last term.

(a) On the grid below, draw a cumulative frequency graph for this information.

(2)

Jane expects that it should take her x minutes to go from her home to school each day.
On 25% of the days last term, Jane took longer than x minutes to go from her home to school.

(b) Use your cumulative frequency graph to find an estimate for the value of x.

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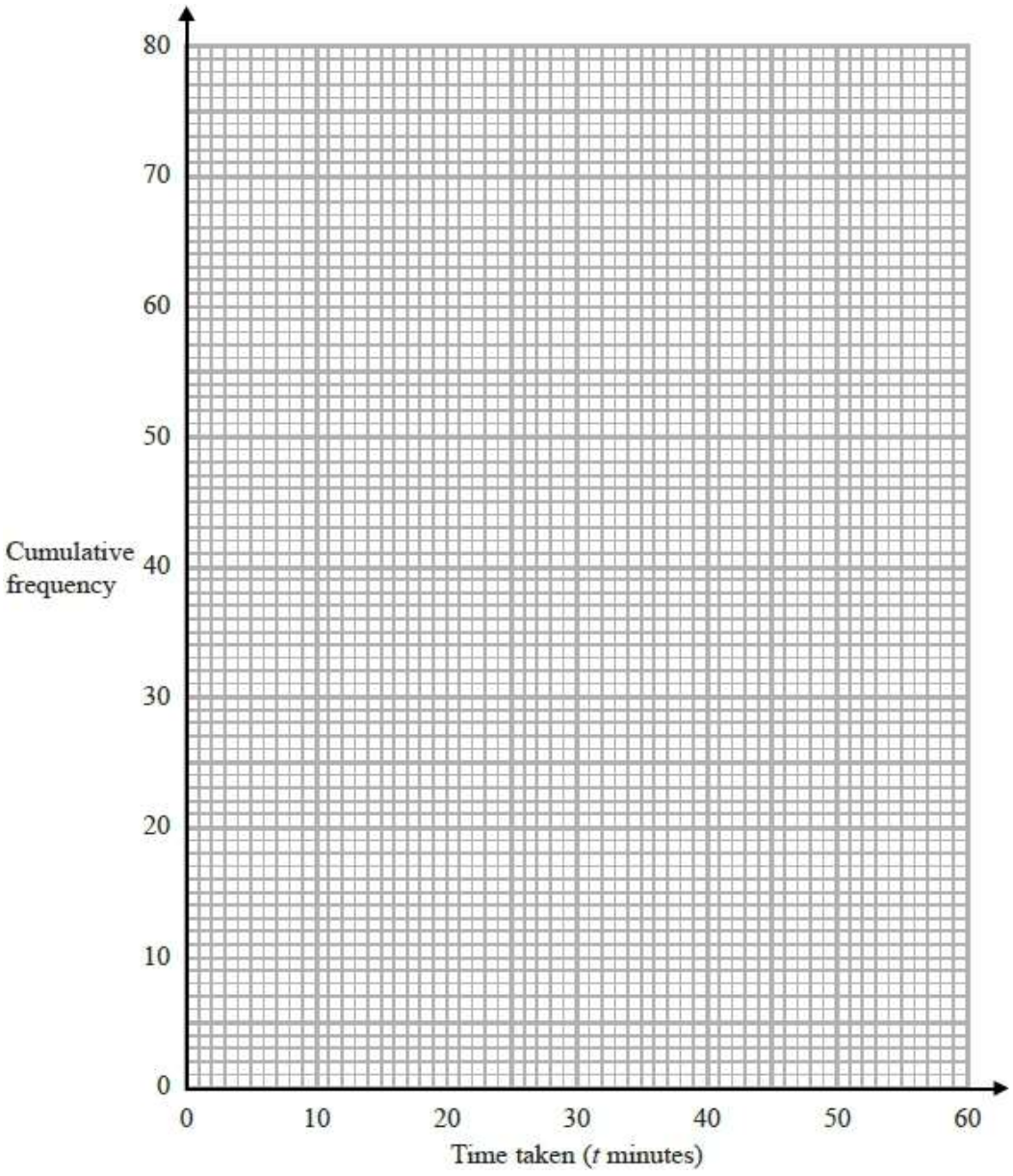
(3)



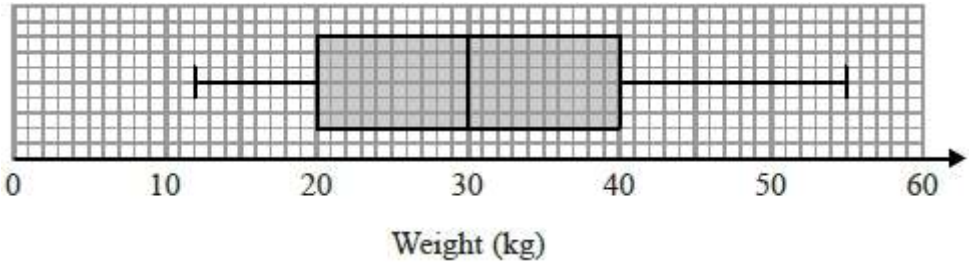
(Total for question = 5 marks)

Q9. CALCULATOR ALLOWED

The table shows some information about the weights, in kg, of some boxes.

Minimum	Lower Quartile	Median	Upper Quartile	Range
12	20	32	40	55

Yusuf uses this information to draw the box plot below.



Write down two things wrong with this box plot.

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2 .....

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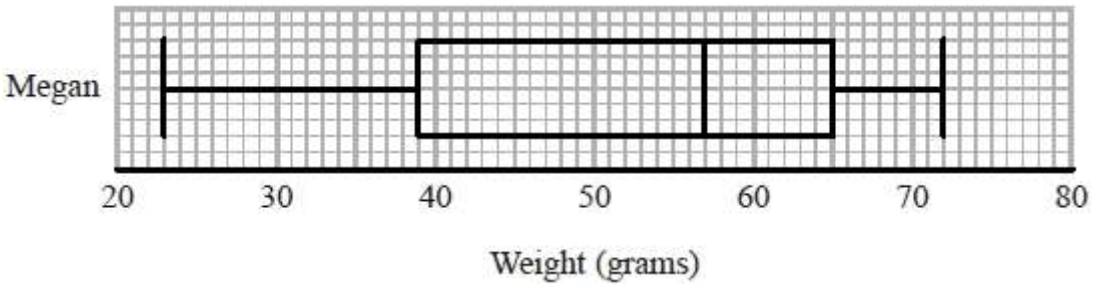
(Total for question = 2 marks)

Q10. CALCULATOR ALLOWED

Megan grows potatoes.

The box plot below shows information about the weights of Megan's potatoes.



Megan says that half of her potatoes weigh less than 50 grams each.

(a) Is Megan correct? Give a reason for your answer.

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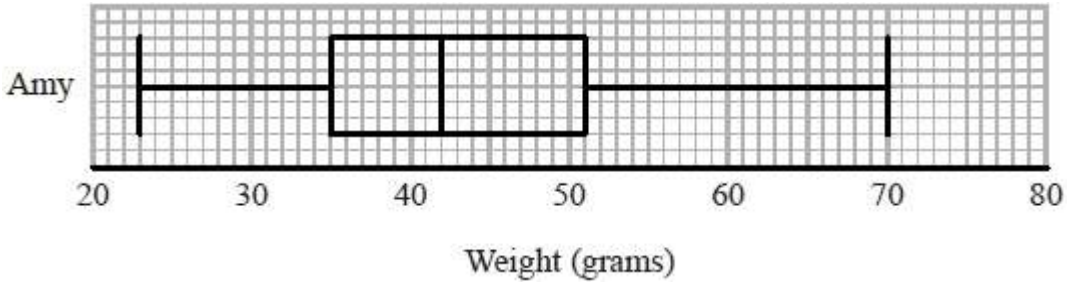
(1)

Amy also grows potatoes. The box plot below shows information about the weights of Amy's potatoes.



(b) Compare the distribution of the weights of Megan's potatoes with the distribution of the weights of Amy's potatoes.

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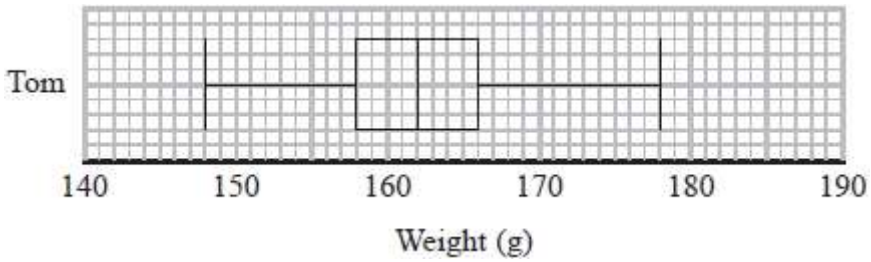
(2)

(Total for question = 3 marks)

Q11. CALCULATOR ALLOWED

Tom grows tomatoes. The box plot below shows the distribution of the weights of 15 of Tom's tomatoes.



(a) Work out the interquartile range.

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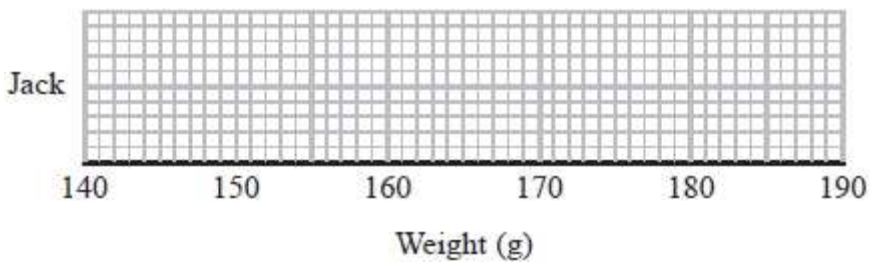
(1)

Jack also grows tomatoes.

Here are the weights, in grams, of 15 of Jack's tomatoes.

153 155 158 164 166 167 170 170 173 174 175 175 177 179 186

(b) On the grid below, draw a box plot for this information.



(3)

(c) Compare the distribution of the weights of Tom's tomatoes with the distribution of the weights of Jack's tomatoes.

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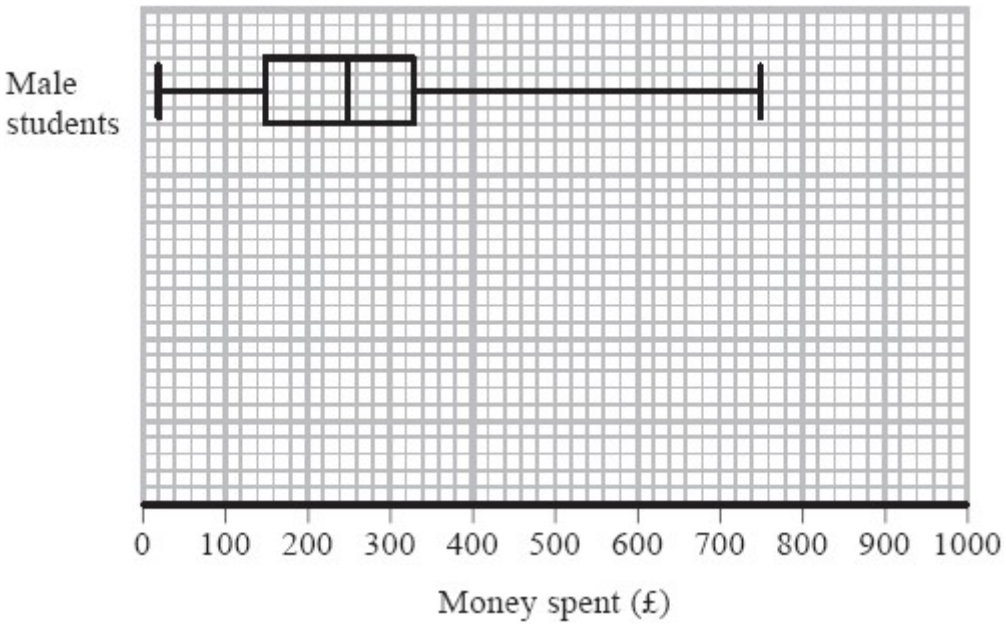
(2)

(Total for question = 6 marks)

Q12. CALCULATOR ALLOWED

The box plot shows information about the distribution of the amounts of money spent by some male students on their holidays.



(a) Work out the interquartile range for the amounts of money spent by these male students.

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(2)

The table below shows information about the distribution of the amounts of money spent by some female students on their holidays.

	Smallest	Lower quartile	Median	Upper quartile	Largest
Money spent (£)	60	180	300	350	650

(b) On the grid above, draw a box plot for the information in the table.

(2)

Chris says,

"The box plots show that the female students spent more money than the male students."

(c) Is Chris correct? Give a reason for your answer.

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(1)

(Total for question = 5 marks)

Q13. CALCULATOR ALLOWED

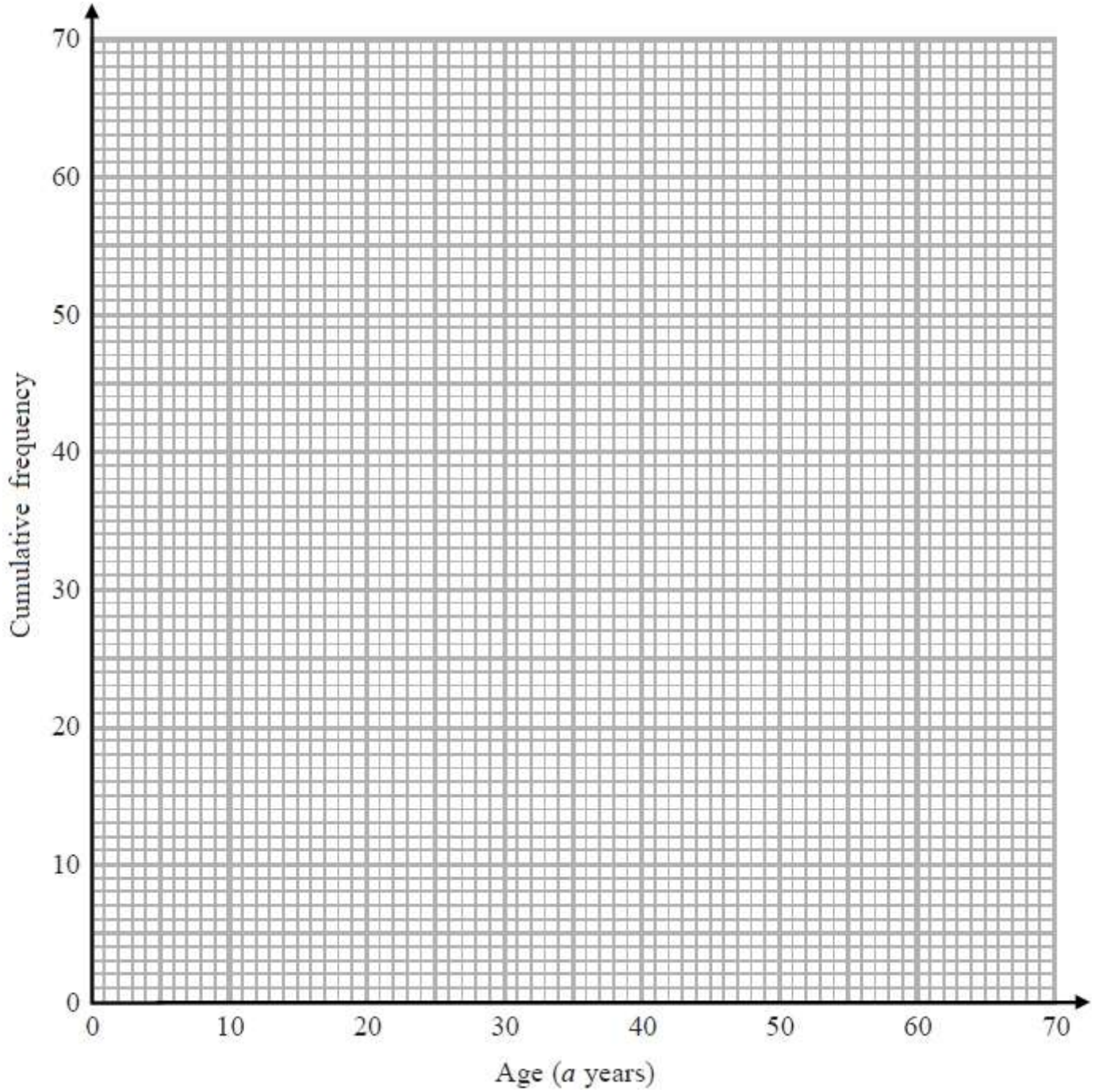
Francesco carried out a survey about the ages of the people in his office.

The table shows information about his results.

Age (a years)	Cumulative frequency
$20 < a \leqslant 30$	10
$20 < a \leqslant 40$	26
$20 < a \leqslant 50$	58
$20 < a \leqslant 60$	66
$20 < a \leqslant 70$	70

(a) On the grid below, draw a cumulative frequency graph for this information.

(2)



(b) Use your graph to find an estimate for the median age.

..... years

(1)

Francesco says,

"More than 60% of the people in the office are between 35 and 55 years old."

(c) Use your graph to determine if Francesco is correct.

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(3)

(Total for question = 6 marks)

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Q14. CALCULATOR ALLOWED

The grouped frequency table gives information about the times, in minutes, that 80 office workers take to get to work.

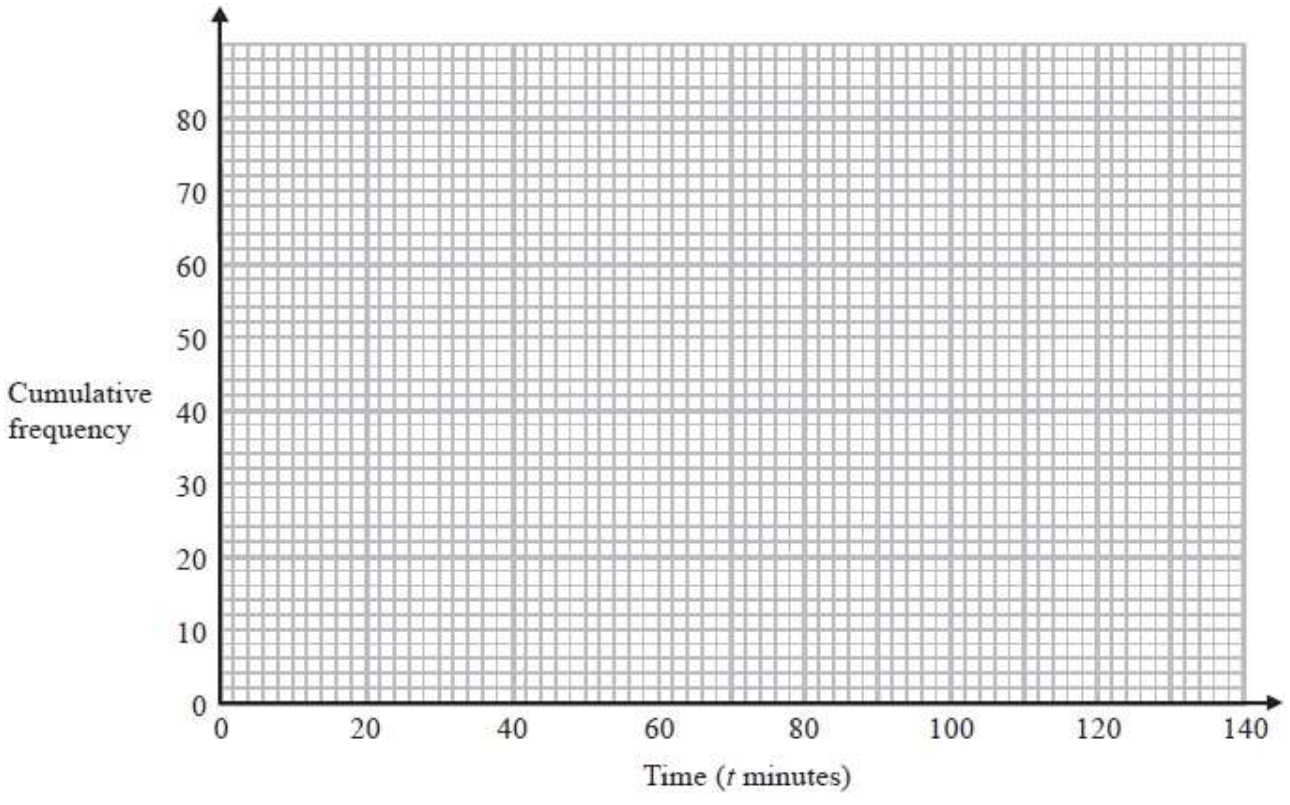
Time (t minutes)	Frequency
$0 < t \leqslant 20$	5
$20 < t \leqslant 40$	30
$40 < t \leqslant 60$	20
$60 < t \leqslant 80$	15
$80 < t \leqslant 100$	8
$100 < t \leqslant 120$	2

(a) Complete the cumulative frequency table.

Time (t minutes)	Cumulative frequency
$0 < t \leqslant 20$	
$0 < t \leqslant 40$	
$0 < t \leqslant 60$	
$0 < t \leqslant 80$	
$0 < t \leqslant 100$	
$0 < t \leqslant 120$	

(1)

(b) On the grid, draw the cumulative frequency graph for this information.



(2)

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(c) Use your graph to find an estimate for the percentage of these office workers who take more than 90 minutes to get to work.

..... %

(3)

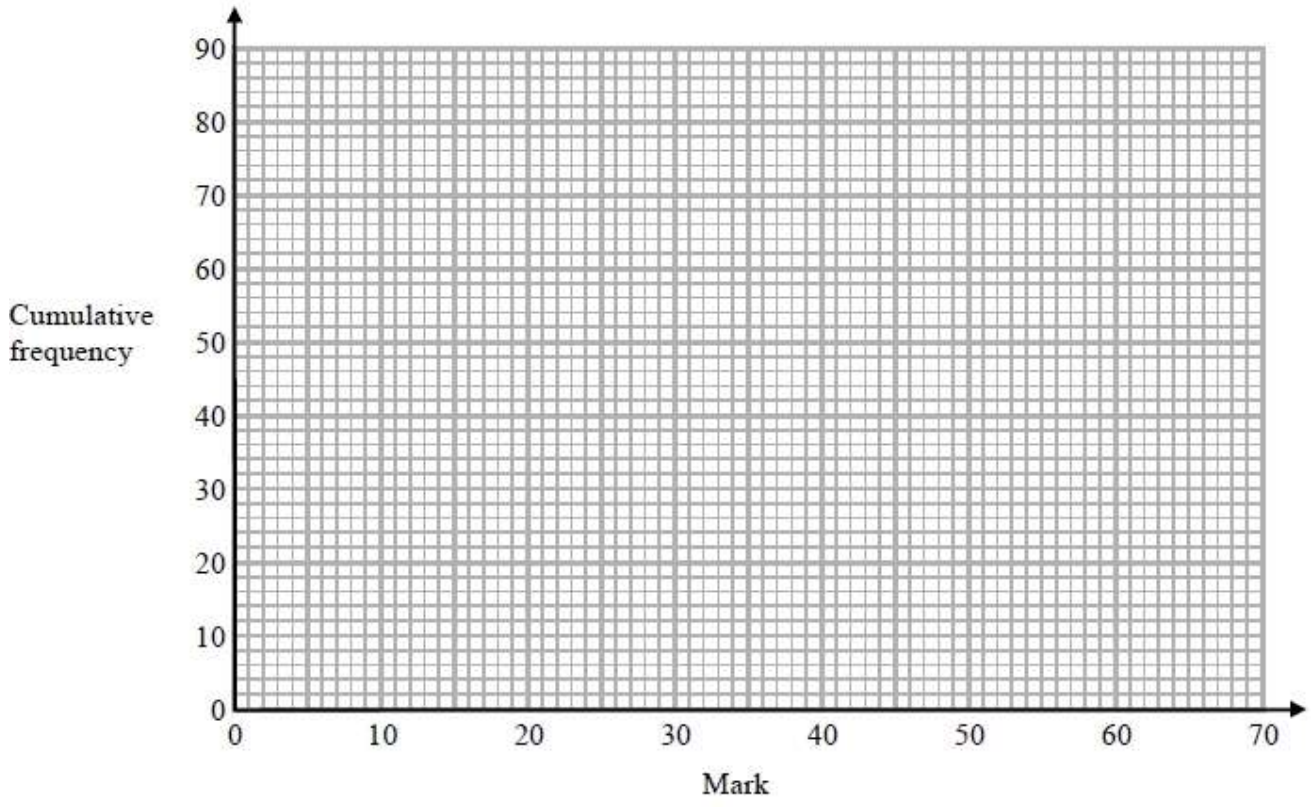
(Total for question = 6 marks)

Q15. CALCULATOR ALLOWED

The cumulative frequency table shows the marks some students got in a test.

Mark (m)	Cumulative frequency
$0 < m \leqslant 10$	8
$0 < m \leqslant 20$	23
$0 < m \leqslant 30$	48
$0 < m \leqslant 40$	65
$0 < m \leqslant 50$	74
$0 < m \leqslant 60$	80

(a) On the grid, plot a cumulative frequency graph for this information.



(2)

(b) Find the median mark.

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(1)

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Students either pass the test or fail the test.
The pass mark is set so that 3 times as many students fail the test as pass the test.

(c) Find an estimate for the lowest possible pass mark.

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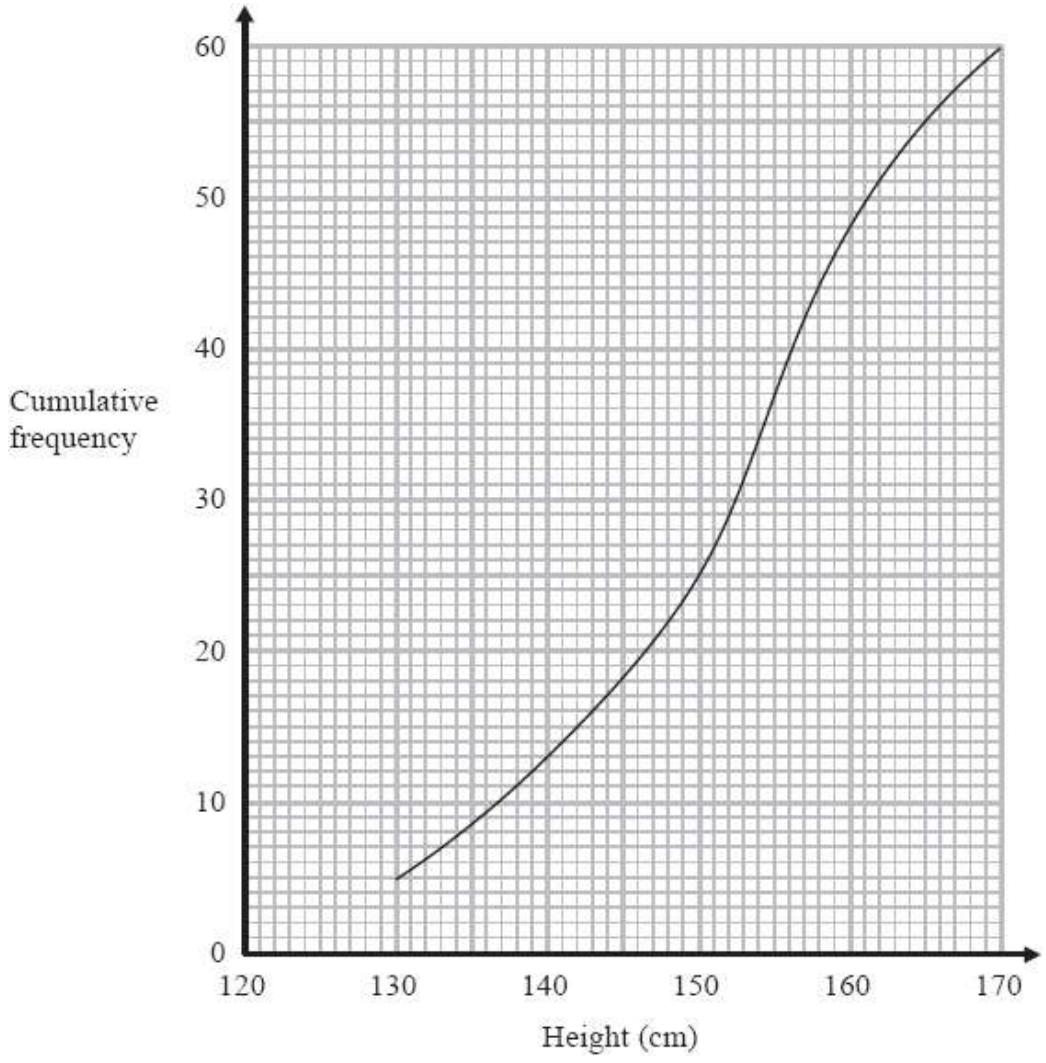
(3)

(Total for question = 6 marks)

Q16. CALCULATOR ALLOWED

The cumulative frequency graph shows some information about the heights, in cm, of 60 students.



Work out an estimate for the number of these students with a height greater than 160 cm.

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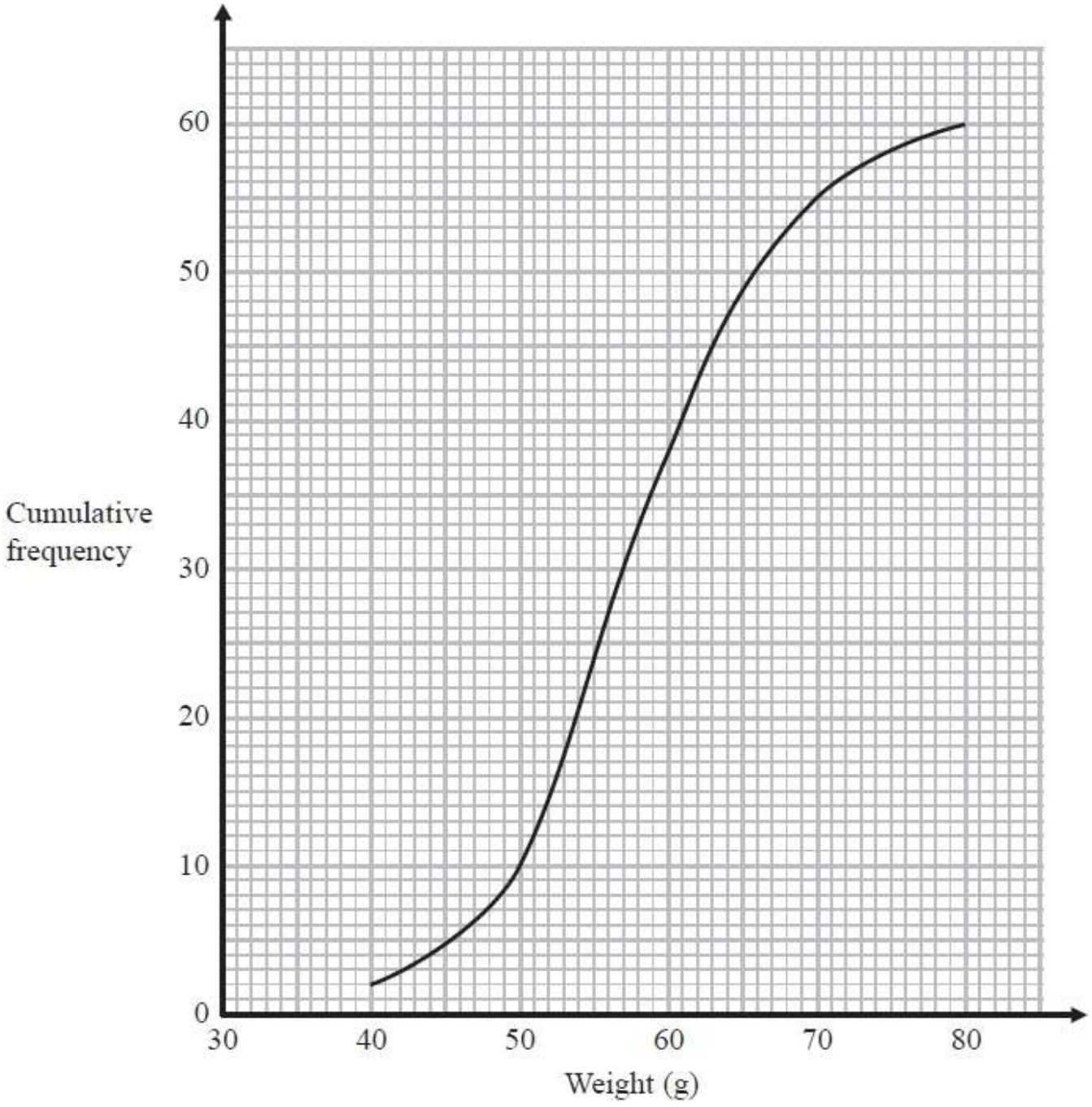
(Total for question = 2 marks)

Q17. CALCULATOR ALLOWED

The cumulative frequency graph shows information about the weights of 60 potatoes.



(a) Use the graph to find an estimate for the median weight.

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(1)

Jamil says,

"80 – 40 = 40 so the range of the weights is 40 g."

(b) Is Jamil correct?

You must give a reason for your answer.

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(1)

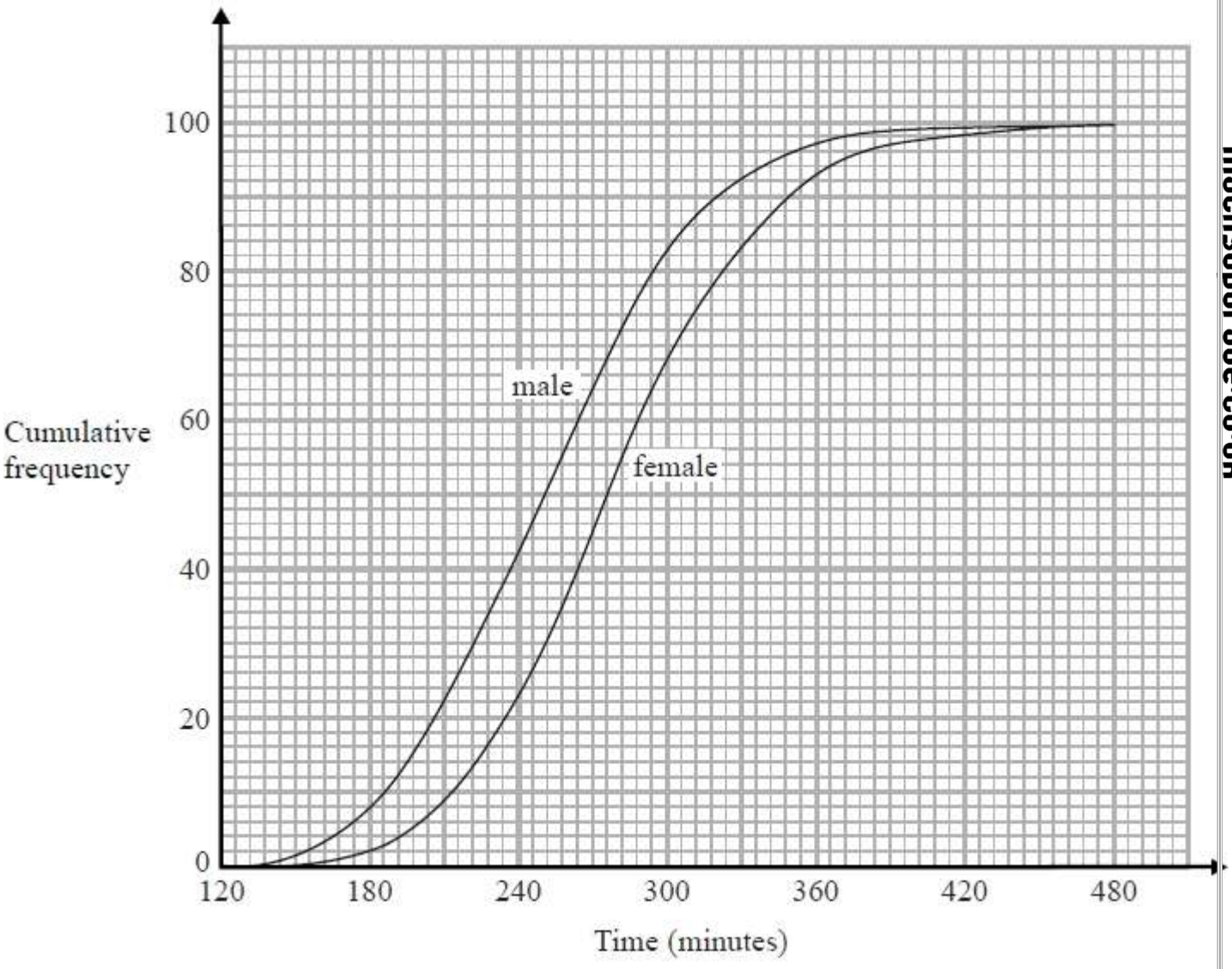
(c) Show that less than 25% of the potatoes have a weight greater than 65 g.

(2)

(Total for question = 4 marks)

Q18. CALCULATOR ALLOWED

The cumulative frequency graphs show information about the times taken by 100 male runners and by 100 female runners to finish the London marathon.



A male runner is chosen at random.

(a) Find an estimate for the probability that this runner took less than 4 hours to finish the London marathon.

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(2)

(b) Use medians and interquartile ranges to compare the distribution of the times taken by the male runners with the distribution of the times taken by the female runners.

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(4)

(Total for question = 6 marks)